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May 8, 2015

**VIA ELECTRONIC FILING**

The Honorable Jocelyn G. Boyd  
Chief Clerk / Administrator  
Public Service Commission of South Carolina  
101 Executive Center Drive, Suite 100  
Columbia, South Carolina 29211

**RE: Application of Duke Energy Carolinas, LLC to Establish a Distributed  
Energy Resource Program  
Docket No. 2015-55-E**

Dear Mrs. Boyd:

Enclosed for filing on behalf of Duke Energy Carolinas, LLC ("Duke Energy Carolinas" or "the Company"), please find corrected versions of the Rebuttal Testimony of Emily O. Felt and Jose I. Merino, originally filed on May 7, 2015, in the above-referenced matter. The Rebuttal Testimony of Ms. Felt and Mr. Merino filed yesterday with the Commission on behalf of the Company contained formatting and scanning errors that require correction for the record. Please allow the corrected versions of their testimony to replace the prior versions filed in this docket.

Thank you for your attention to this matter and please let us know if you have any questions.

Sincerely,

Charles A. Castle

CAC/gf

Enclosures

Cc: All parties of record

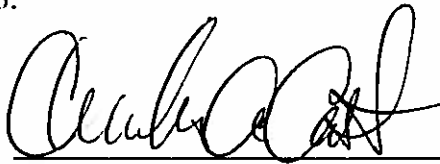
STATE OF SOUTH CAROLINA  
BEFORE THE PUBLIC SERVICE COMMISSION  
DOCKET NO. 2015-55-E

Application of Duke Energy Carolinas, LLC	)	
to Establish A Distributed Energy Resource	)	CERTIFICATE OF SERVICE
Program	)	

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I hereby certify that the corrected Rebuttal Testimony of Emily O. Felt and Jose I. Merino, filed on behalf of Duke Energy Carolinas, LLC, have been served by electronic mail (e-mail), hand delivery or by depositing a copy in United States Mail, first class postage prepaid, properly addressed to the parties of record.

This the 8<sup>th</sup> day of May, 2015.



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**BEFORE THE  
PUBLIC SERVICE COMMISSION OF  
SOUTH CAROLINA**

**DOCKET NO. 2015-55-E**

In the Matter of	)	
	)	
Application of	)	<b>REBUTTAL TESTIMONY</b>
Duke Energy Carolinas, LLC to	)	<b>OF EMILY O. FELT</b>
Establish a Distributed Energy	)	<b>ON BEHALF OF</b>
Resource Program	)	<b>DUKE ENERGY CAROLINAS, LLC</b>
	)	
	)	

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1   **Q.   PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2   A.   My name is Emily O. Felt. My business address is 400 South Tryon Street, Charlotte,  
3       North Carolina.

4   **Q.   BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

5   A.   I am Manager of Strategy and Policy in the Distributed Energy Resources group at Duke  
6       Energy Corporation.

7   **Q.   DID YOU PREVIOUSLY CAUSE DIRECT TESTIMONY TO BE FILED IN THIS**  
8       **DOCKET?**

9   A.   Yes.

10  **Q.   WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

11  A.   The purpose of my rebuttal testimony is to respond to certain aspects of the testimony of the  
12       Coastal Conservation League (“CCL”) and Southern Alliance for Clean Energy (“SACE”)  
13       witness John Wilson, CCL witness Hamilton Davis and The Alliance for Solar Choice  
14       (“TASC”) witness Justin Barnes as it pertains to the Duke Energy Carolinas, LLC’s (“DEC”  
15       or “the Company”) application.

16  **Q.   HOW DO YOU RESPOND TO CCL AND SACE WITNESS DAVIS’ AND TASC**  
17       **WITNESS BARNES’ RECOMMENDATIONS THAT THE COMMISSION**  
18       **REJECT THE COMPANY’S PROPOSAL TO USE SHARED SOLAR**  
19       **SUBSCRIPTIONS THAT ARE LESS THAN 20 KILOWATTS (“KW”) IN SIZE TO**  
20       **MEET ACT 236’S REQUIREMENT THAT THE COMPANY INCENTIVIZE**  
21       **CUSTOMERS TO PURCHASE OR LEASE FACILITIES WITH A NAMEPLATE**  
22       **CAPACITY NO GREATER THAN 20KW?**

23  A.   The Company agrees that until customer participation and solar adoption rates are better  
24       understood, the distributed energy resources that result from the Shared Solar Program

1 enrollment will not count toward Act 236's requirement that the Company incentivize  
2 customers to purchase or lease facilities with a nameplate capacity no greater than 20  
3 kilowatts ("kW"). The Company may revisit this request in the future if customer adoption  
4 rates indicate that it may be unable to achieve the Act 236 requirements related to  
5 renewable capacity 20 kW and less.

6 **Q. WITNESS DAVIS ASSERTS THAT SHARED SOLAR PROGRAM**  
7 **ENROLLMENTS SHOULD BE PORTABLE FOR CUSTOMERS. DO YOU**  
8 **AGREE?**

9 A. Yes, I do. As stated on page 1 of the proposed Shared Solar Tariff, "if the customer moves  
10 and transfers electric service to another location within the Company's South Carolina  
11 service territory, the customer will be allowed to continue service under this Rider at the  
12 new location provided he continues his electric service under this rider."

13 **Q. WITNESS DAVIS ASSERTS THAT SHARED SOLAR PROGRAM**  
14 **ENROLLMENTS SHOULD BE TRANSFERABLE BACK TO DEC OR TO**  
15 **ANOTHER CUSTOMER WITHIN THE COMPANY'S SERVICE TERRITORY SO**  
16 **THAT THE "MONETARY LOSS TO PARTICIPANTS WHO DISCONTINUE**  
17 **SERVICE UNDER THIS RIDER IS NOT OVERLY PUNITIVE AND DOES NOT**  
18 **DISCOURAGE PARTICIPATION." DO YOU AGREE?**

19 A. No, I do not. The Company projects that if a customer were to discontinue service or "exit  
20 the program" prior to Years 4-5 of the subscription, that customer would incur some net  
21 financial loss. That is, the energy credits that received in Years 1 through Year 3 essentially  
22 "pay off" the cost of the application (\$20) and the cost of initial capacity (\$100 per watt  
23 DC); by Years 4 or 5, the customer will be net cash flow positive. Given that there are no

1 termination fees for exiting the program and that the payback on the subscription is  
2 generally swift, we believe that the proposed approach is reasonable and will not discourage  
3 participation. Should experience prove otherwise, the Company is willing to examine  
4 alternatives in subsequent iterations or modifications to the program.

5 **Q. WITNESS DAVIS ASSERTS THAT SHARED SOLAR PROJECTS SHOULD BE**  
6 **SITED IN COMMUNITIES THAT WILL BENEFIT FROM THEM. WHAT IS THE**  
7 **COMPANY'S PLAN FOR SITING ITS SHARED SOLAR FACILITIES?**

8 **A.** National experience suggests that visibility and participation are indeed linked. The  
9 Company proposes to solicit proposals for Shared Solar facilities, each 1,000 kW in size or  
10 less, located in communities throughout the Company's South Carolina retail service area,  
11 and proximate to potential subscribers. For example, the Company would prefer that its  
12 Shared Solar facilities were sited in areas visible to the general public and perhaps even  
13 within view of educational institutions, rather than in low-visibility, low-traffic areas. As  
14 with many other aspects of its proposed programs, the Company is willing to consider  
15 options upon implementation. However, I believe that creating unduly prescriptive  
16 locational constraints for our proposed Shared Solar is unnecessary at this time as it could  
17 delay and impair our ability to roll out the programs.

18 **Q. WITNESS DAVIS FURTHER PROPOSES THAT DEC ALLOW THE INITIAL**  
19 **SUBSCRIPTION CHARGES FOR THE SHARED SOLAR PROGRAM TO BE**  
20 **PAID UP-FRONT OR OVER THE LENGTH OF THE SUBSCRIPTION TERM**  
21 **AND THAT THE COMPANY WAIVE SOME OR ALL OF THE INITIAL**  
22 **SUBSCRIPTION CHARGE FOR LOW-INCOME CUSTOMERS.**

23 **A.** Witness Davis proposes improving the attractiveness of the Shared Solar Program by

1 lowering the cost of participation and/or providing customers with a “pay-as-you-go” or “on  
2 bill financing” option. Both are good suggestions that the Company will consider in future  
3 iterations of the program should initial customer response be underwhelming.

4 **Q. CCL WITNESS DAVIS AND TASC WITNESS BARNES RECOMMEND THAT**  
5 **THE COMPANY ELIMINATE THE CALENDAR YEAR CAPACITY**  
6 **LIMITATION IN ITS SOLAR REBATE PROGRAM AND INSTEAD CONSIDER A**  
7 **SCHEDULED STEP-DOWN APPROACH TO MODIFICATION OF ITS SOLAR**  
8 **REBATE PROGRAM IN ORDER TO IMPROVE THE TRANSPARENCY AND**  
9 **PREDICTABILITY OF THE PROGRAM. DO YOU AGREE?**

10 **A.** Witnesses Davis and Barnes raise valid concerns on this issue and Company witness Merino  
11 speaks to DEC’s position on their argument. However, in an effort to avoid growth  
12 disruptions related to the calendar year limit, the Company proposes to eliminate the  
13 calendar year limitation within its Solar Rebate tariffs and will instead propose to review,  
14 evaluate and propose a new Solar Rebate level when the aggregate capacity limit or  
15 “tranche” stated in the tariff is reached. The Company will make such proposals subject to the  
16 modification parameters proposed by the ORS, and will use reasonable efforts to allow for  
17 an uninterrupted transition from one Solar Rebate tranche to the next. Although an  
18 automatic step-down approach to the Solar Rebate was initially discussed, the Company  
19 ultimately decided that it would be more prudent to more closely monitor the rebate’s  
20 effectiveness upon each successive tranche of capacity energized than to fix the rebate levels  
21 for the next half dozen years today, particularly given the swiftness with which installed cost  
22 of solar has dropped in years past and given the uncertainty in extension or expiry of the  
23 federal tax incentives for solar 2016.

1    **Q.     DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?**

2    **A.     Yes, it does.**

**DOCKET NO. 2015-55-E**

## Application of Duke Energy Carolinas, LLC to Establish a Distributed Energy Resource Program

**REBUTTAL TESTIMONY OF  
JOSE I. MERINO ON BEHALF  
OF DUKE ENERGY  
CAROLINAS, LLC**

1    **Q.     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2    A.     My name is Jose I. Merino. My business address is 400 South Tryon, Charlotte, North  
3            Carolina.

4    **Q.     BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION WITH**  
5            **THE COMPANY?**

6    A.     I currently serve as Director of Renewable Analytics for Duke Energy Corporation  
7            ("Duke Energy").

8    **Q.     DID YOU PREVIOUSLY CAUSE DIRECT TESTIMONY TO BE FILED IN THIS**  
9            **DOCKET?**

10   A.     Yes, I did.

11   **Q.     WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

12   A.     The purpose of my rebuttal testimony is to respond to the testimony of Southern Alliance  
13            for Clean Energy ("SACE") and Coastal Conservation League ("CCL") witness John D.  
14            Wilson, CCL witness Hamilton Davis and The Alliance for Solar Choice witness Justin  
15            Barnes filed in this docket. Specifically, my testimony will address SACE and CCL  
16            witness Wilson's recommendation that the Public Service Commission of South Carolina  
17            ("the Commission") require Duke Energy Carolinas, LLC ("DEC" or "the Company") to  
18            solicit bids for power purchase agreements ("PPAs") with terms of 20, 25 and 30 year  
19            terms in its proposed request for proposals ("RFP") for utility-scale renewable resources.  
20            I also address CCL witness Davis' and TASC witness Barnes' recommendations related  
21            to the Company's Solar Rebate program regarding rebate levels and CCL witness Davis'  
22            recommendation related to the Company's Shared Solar program regarding participation  
23            term. For the reasons set forth below, I believe the Commission should reject SACE and

1 CCL witness Wilson's recommendation and allow the Company to solicit bids with 10  
2 year terms through its RFP. Further, I believe the Commission should allow the  
3 Company to proceed as set forth within its Application regarding its Solar Rebate levels  
4 and Shared Solar term.

5 **Q. SACE AND CCL WITNESS WILSON ALLEGES THAT LIMITING THE RFP**  
6 **SOLICITATION TO PPAS WITH 10 YEAR TERMS WILL LEAD TO THE**  
7 **COMPANY ACCEPT "UNNECESSARILY EXPENSIVE PRICES". DO YOU**  
8 **AGREE WITH THIS CONCLUSION?**

9 **A.** I do not agree. The Company will make a selection based on criteria that includes the  
10 purchase power price as well as other contract attributes. The Company is not obligated  
11 to make a selection from the bids received through the proposed solicitation if it  
12 considers that the prices and terms included in the proposals are not in alignment with its  
13 distributed energy resource ("DER") program goals or in the best interest of its South  
14 Carolina retail customers.

15 **Q. ARE LONGER TERM PPAS TO DEVELOPERS PREFERABLE FOR UTILITY**  
16 **CUSTOMERS?**

17 **A.** No, they are not. If long-term PPAs are executed at a fixed price for the duration of the  
18 contract, utilities can be exposed to unnecessarily high costs if market prices decline in  
19 the future. Alternatively, if future market prices are higher than the executed PPA price, a  
20 longer-term PPA may prove advantageous for utilities and its customers. Unfortunately,  
21 it is very difficult to predict future energy costs with a high degree of accuracy; that is  
22 why the Company procures coal, natural gas and other fuels by relying on contracts  
23 which generally do not exceed 5 years.

1 With regard to the SC DER program, PPA's longer than 10 years will result in  
2 higher incremental costs relative to 10 year PPAs. I agree with Mr. Wilson that the cost  
3 per year may be lower for PPAs with longer tenor, but the total PPA cost or the sum of  
4 purchase power expenses incurred during the duration of the PPA will be higher. For  
5 example, if the utility enters into a 10 year purchase power contract for 87,600 MWH per  
6 year at \$100/MWH, the total Dollar for the term of the contract will be \$87,600,000 or  
7 \$8,760,000 per year. However, if the utility agrees to extend the length of the agreement  
8 by 5 years and sell at a lower price of \$90/MWH, the total cost will \$118,260,000 or  
9 \$7,884,000 per year. Even though the average annual cost decreased by 10% with the  
10 longer term PPA, the total cost increased by 35%. If this simple calculation is converted  
11 to present value or today's Dollars, the 10 year PPA at \$100/MWH would be 21%  
12 cheaper than a 15 year PPA at \$90/MWH, assuming no other variables change.

13 **Q. PLEASE DESCRIBE THE RISKS INHERENT IN LONGER TERM PPAS.**

14 **A.** In addition to price there are other considerations when evaluating longer term purchase  
15 agreements such as the seller's ability to perform its contract obligations, the seller's  
16 financial position or other factors that may be adversely impacted in the future. Holding  
17 other variables constant, both credit and performance risk have a positive relationship  
18 with the contract's time to expiration.

19 **Q. ARE PPA TERMS LONGER THAN 10 YEARS NECESSARY IN THE MARKET**  
20 **TODAY?**

21 **A.** No, we do not believe PPA terms longer than 10 years are necessary for projects to be  
22 financially viable in SC. As an example, Duke Energy Progress, Inc. and Darlington  
23 Solar, LLC ("Darlington PPA") recently executed a 10 year PPA for energy to be

1 delivered from a facility in Darlington, SC,. Although the actual pricing within the PPA  
2 is confidential and market sensitive information, it bears noting that the Darlington PPA,  
3 approved for filing by the Commission in Docket No. 2015-146-E, was entered into  
4 pursuant to the Company's obligations under the Public Utility Regulatory Policy Act of  
5 1978 ("PURPA"), which creates a ceiling for the cost to be paid by the utility at its  
6 avoided cost. Further, developers entering into shorter term PPAs with the Company  
7 have the option to renew or negotiate a new agreement at the expiration of the contract,  
8 based on the Company's avoided costs at that time.

9 **Q. PLEASE EXPLAIN WHY THE COMPANY CHOSE 10 YEARS AS THE**  
10 **DESIRED TERM FOR PPA BIDS IN THE PROPOSED RFP.**

11 **A.** The Company selected 10 years as the maximum duration of PPA proposals for the  
12 following reasons: to maintain the total costs of the DER program at acceptable levels; to  
13 be consistent with the duration of other components of the DER program, such as the  
14 NEM incentive and the Shared Solar incentive; to avoid locking in a fixed price for a  
15 period longer than most fuel purchases and to mitigate performance risk; and to avoid  
16 perpetuating the cost recovery and associated bill impact to South Carolina customers.

17 **Q. ARE PPAS ENTERED INTO IN OTHER JURISDICTIONS PURSUANT TO**  
18 **STATE-SPECIFIC POLICY REQUIREMENTS RELEVANT TO THE**  
19 **COMPANY'S COMPLIANCE WITH ITS ACT 236 REQUIREMENTS?**

20 **A.** Not necessarily. The PPAs executed in other jurisdictions may be governed by different  
21 regulations and policy constraints, their prices may set based on different economic  
22 assumptions and underlying required inputs, such as jurisdictional specific electric rates,  
23 and the budgets or funding set by state specific policy requirements will vary. Further,

1 the fundamental cost of doing business in one state can, and often will, be very different  
2 from the related costs in another. Through its proposals, the Company is simply seeking  
3 to implement a reasonable solution for its South Carolina customers, consistent with the  
4 goals and requirements of Act 236.

5 **Q. DO YOU BELIEVE THE COMPANY'S APPROACH TO SOLICIT 10 YEAR**  
6 **PPAS EFFECTIVELY BALANCES RISK BETWEEN PROJECT DEVELOPERS**  
7 **AND THE COMPANY'S CUSTOMERS?**

8 **A.** Yes. Very simply, from our perspective, the longer the term for the PPA, the more risk  
9 that is shifted to the Company's retail customers. To limit long-term pricing risk to its  
10 customers, the Company's goal is to contract at terms no longer than necessary to procure  
11 reasonably-priced energy to meet the requirements of Act 236.

12 **Q. WILL THE COMPANY EXECUTE PPAS THAT IT BELIEVES DO NOT**  
13 **INCLUDE FAIR AND REASONABLE PRICES, REGARDLESS OF TERM?**

14 **A.** No. The Company won't enter into PPAs if the cost is not competitive, independent of  
15 the contract term, or if the other terms and conditions of the proposed agreement are  
16 unreasonable.

17 **Q. AND WOULD THE COMPANY ACQUIRE OR CONSTRUCT A FACILITY TO**  
18 **COMPLY WITH ITS ACT 236 REQUIREMENTS IF THE COST WAS NOT**  
19 **REASONABLE?**

20 **A.** No. The Company would not build or purchase a renewable energy generation facility to  
21 comply with Act 236 if the cost was not reasonable or competitive with other options.

1 Q. IN SUM, DO YOU BELIEVE THE COMPANY'S PROPOSED RFP  
2 SOLICITATION WILL YIELD REASONABLE RESULTS THAT WILL  
3 BENEFIT ITS CUSTOMERS AND COMPLY WITH ACT 236?

4 A. Yes, I do.

5 Q. CCL AND SACE WITNESS DAVIS AND TASC WITNESS BARNES BOTH  
6 ADVOCATE FOR AND PROPOSE A STEPDOWN INCENTIVE APPROACH  
7 WHERE INCENTIVES WILL DECLINE BASED ON ACHIEVING CERTAIN  
8 BENCHMARKS SUCH AS MW CAPACITY TARGETS AND BUDGET LEVELS,  
9 TO ENHANCE THE TRANSPARENCY AND PREDICTABILITY OF THE  
10 MARKET. DO YOU AGREE WITH THIS PROPOSAL?

11 A. I agree with Mr. Davis and Mr. Barnes that a prescribed formula which sets the projected  
12 incentive level as a function of budget availability, capacity penetration or technology  
13 costs could present enhanced transparency or predictability to the marketplace. However,  
14 the Company believes that at this time, it is premature to assume predefined relationship  
15 between incentives and market conditions for rebate scale down planning, without  
16 learning more about how the market will react to the rebates that the Company proposed  
17 to start. It is more prudent to discuss their proposals once more data is available to  
18 validate the connection between incentives and renewable penetration in South Carolina.  
19 The Company will diligently monitor market conditions and perform an evaluation of  
20 actual penetration vs. the projections used in its DER application, before presenting  
21 recommendations for different incentives, products or both. The Company agrees with  
22 Mr. Davis suggestion to establish a web-based tracking mechanism that can be used to  
23 provide an update on potential benchmark variables.

1   **Q.   MR. DAVIS ALSO RECOMMENDS TO EXTEND THE PERIOD OF SHARED**  
2       **SOLAR SUBSCRIPTIONS FROM 10 YEARS TO AT LEAST 20 YEARS.   DO**  
3       **YOU AGREE WITH THIS RECOMMENDATION?**

4   **A.**   No. In his testimony, Mr. Davis explains that solar systems are long term investments  
5       that have a projected life span of 20 or more years and that customer should have the  
6       option to subscribe to a Shared Solar program of similar duration. Mr. Davis also states  
7       that customers who sign up for longer term subscriptions can hedge against the risk of  
8       increasing retail rates. These points made by Mr. Davis fail to consider the totality of the  
9       factors that the Company included in its determination of the Shared Solar contract  
10      length. These factors principally include program budget constraints and the goal of  
11      minimizing the amount of cost that would need to be recovered beyond the period when  
12      DER program components expire. The economic advantage of the Shared Solar offer  
13      over the regular retail rate exists exclusively because the program is subsidized by the  
14      utility; extending the program period from 10 to 20 years also means that the subsidy has  
15      to be extended. In addition, the Company believes that over time, some customers are  
16      likely to move from their current location to a different one and it would be unreasonable  
17      for them to sign a 20 year or longer Shared Solar program.

18           With respect to witness Davis' point about the value of a 20 year hedge against  
19      increasing electric bills, I must note that retail rates are not the only component of the  
20      Company's Shared Solar offer. Other important inputs include the amount that  
21      customers are credited for the solar production, initial fees and subscription charges. If  
22      the Company were to consider options for Shared Solar that are longer than 10 years, the  
23      offer terms will likely be adjusted to account for different administrative costs, price risk

1 and other factors to ensure that both customers and the Company are protected against  
2 adverse events that can occur as contract term increases. Thus, it is not realistic to assume  
3 that extending the Shared Solar contract period automatically creates a positive price  
4 hedge for customers.

5 **Q. IS THE COMPANY OPEN TO CONSIDER DIFFERENT APPROACHES, LIKE**  
6 **THOSE PROPOSED BY CCL WITNESS DAVIS AND TASC WITNESS**  
7 **BARNES, AS IT GATHERS ADDITIONAL MARKET AND CUSTOMER**  
8 **PARTICIPATION DATA THROUGH THE IMPLEMENTATION OF ITS DER**  
9 **CUSTOMER PROGRAMS?**

10 **A.** Yes. We anticipate gaining significant insight and information into the South Carolina  
11 market through the initial implementation of our programs. We will continue to evaluate  
12 and revisit our initial assumptions and modeling and make any necessary adjustments to  
13 attempt to achieve the goals of Act 236. At this time, however, we believe the approach  
14 proposed within our Application is reasonable and appropriate to reach such goals.

15 **Q. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?**

16 **A.** Yes.